


CLIMATE ACTION PLAN & ENERGY REACH/EV CODE UPDATE

March 23, 2021 City Council Meeting

CITY OF BELMONT

CALIFORNIA BELMONT

CAP CITY EFFORTS

- Energy (Community)
- Energy (Municipal)
- Transportation (Municipal)
- Transportation & Land Use
- Waste
- Water

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ENERGY-COMMUNITY

- Commercial/Residential Green Building Ordinance
- Incentivize Solar Energy Installation
- Energy Rebate/Incentive Program Participation
- Promote PG&E Energy Efficient Programs

CITY OF BELMONT

Commercial & Residential Green Building Ordinance

The City adopted the CalGreen State Building Code, which went into effect January 1, 2020.

Incentivize Solar Energy Installation

The City encourages installation of solar energy systems and offers over-the-counter plan reviews, low-cost permit fees, and streamlined inspections.

Solar energy systems include photovoltaic installations, solar domestic water heating, and solar pool heating.

The City adopted a Streamlined Solar Permit Ordinance in accordance with Assembly Bill No. 2188, which mandates the expeditious processing of solar permits.

Energy Rebate/Incentive Program Participation

- Support & market residential energy audits and retrofits
- Leverage existing rebates/add additional rebates for energy efficient retrofits

Promote PG&E Energy Efficient Programs

The City promotes California First Smart Home, PACE Financing, and PCE energy and water efficient programs, rebates and incentives via the Environmental Sustainability Page and social media platforms.

Additionally, the City holds an Annual Earth Day Event where energy efficient and sustainable businesses and agencies can provide information and share rebate and incentive programs to residents.

Clean Renewable Energy

The City joined the EPA's Green Power Partnership to help reduce negative health impacts of air emissions through the use of green power.

The City exceeds EPA guidelines for buying clean renewable energy.

ENERGY-MUNICIPAL

- Municipal Green Building Policy
- Environmental Purchasing Policy
- Energy Efficiency in Buildings
- Energy Efficient Street Lighting
- Renewable Energy Installation

Municipal Green Building Policy

Community Center conceptual design report includes sustainability measures to be incorporated into further building design.

New Title-24 compliant, reflective roof installations:

- City Hall (2019)
- Twin Pines Senior/Community Center (2020)

Environmental Purchasing Policy

- City will be evaluating battery-operated maintenance tools and equipment
- City will evaluate additional programs & initiatives furthering this measure

Energy Efficiency in Municipal Buildings

- Energy efficient lighting installed at Belmont Library, Lodge, Senior and Community Center, Parks Office, Cipriani Dog Park and the Sports Complex.
- HVAC retrofitting at City Hall and the library was also completed.

Average Annual Savings:

*Energy: 130K/yr
*Electrical: over 500K kWh/yr.
*Gas: over 25K therms/yr.

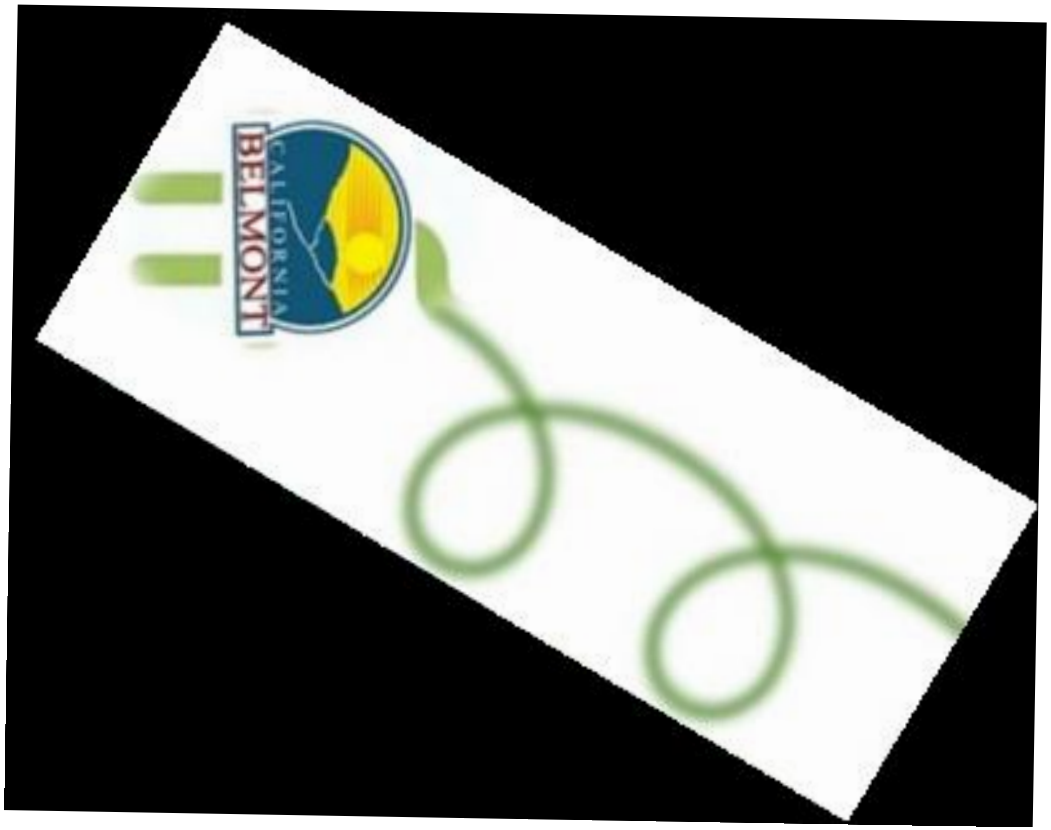
Energy Efficient Street Lighting

The City has converted all of its lighting to LED.

- 1,057 Cobra head style
- 148 Lantern style
- 25 Globe style
- 145 Bike Bridge pathway lights

LED's use 80-90% less energy, resulting in cost savings of approx. $30,000/yr

Significantly longer lifespans result in less maintenance, which cuts down on service calls, which in turn reduces vehicle emissions.



Renewable Energy Installation

The City participates in the Peninsula Clean Energy and Community and Community Choice Aggregation Program.

Additionally, the City opted up to the ECO 100 option (100% renewable energy) for all facilities.

This action will result in 100% reduction in municipal operations electricity emissions, and an estimated 331 MT CO2e decrease in emissions for 2020.

TRANSPORTATION MUNICIPAL

- Efficient Fleet Policy
- Flexible Schedules
- Adoption of low emission vehicles

EFFICIENT FLEET POLICY

- The Public Works Fleet Management Division has begun phasing out older model vehicles and on/off road equipment
- Replaced equipment will include a more fuel-efficient engine with the latest emission reducing technology

EV Charging Stations

The City has conducted site assessments for EV charging stations at City Hall and the Manor House, and has applied for CalVIP funding for EV chargers.

FLEXIBLE SCHEDULES

- The City has established a flex-schedule program to allow modified work hours and facilitate reduced employee vehicle trips

ADOPTION OF LOW EMMISSIONS VEHICLES

- City fleet vehicles are scheduled to be replaced with more fuel-efficient engines and equipped with the latest emission reducing technology.
- Two hybrid vehicles were placed into service and others are scheduled for purchase.
- The City also applied for a grant to purchase electric vehicle charging stations and, in the future, electric vehicles will be purchased beginning with pool cars and other light duty vehicles.

TRANSPORTATION AND LAND USE

- Smart Growth Development
- Walkable/Bikeable Street Landscape
- Bike and Car Sharing

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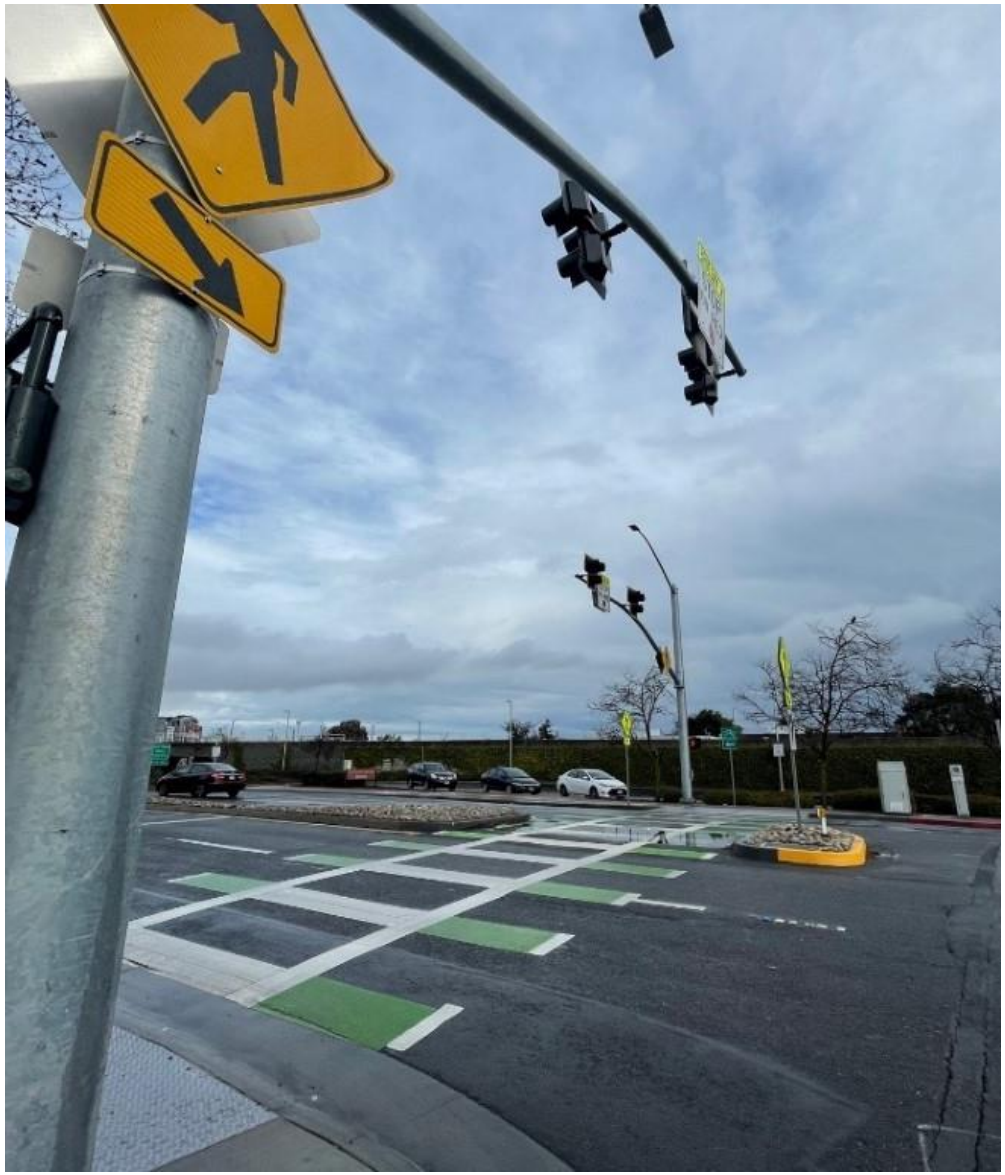
SMART GROWTH DEVELOPMENT

The City has adopted a TDM Program and established a Smart Growth Policy for the ECR corridor that prioritizes infill, higher density, transportation oriented, and mixed-use development.



WALKABLE & BIKABLE STREET LANDSCAPES

The Ralston Ave Corridor Improvement Project focuses on making Ralston Ave more bicycle and pedestrian friendly. The downtown area received a number of improved sidewalks and bike lanes (part of Segments 1 and 2).

Alameda de las Pulgas Corridor is in the beginning stages of design for improving mobility. Maintenance improvements were performed both through scheduled work and the Parking and Traffic Safety Committee (PTSC) requests. Other upgrades include:

3,000 sf of Green Pavement Markings installed

2 Pedestrian Hybrid Beacons installed

21 Curb Ramps installed

9,900 sf of Paver Sidewalk installed

2,600 sf of Concrete Sidewalk installed

BIKE AND CAR SHARING

The City provides employees Commute.org alternatives and incentives such as promoting Bike to Work, and City paid admin fee for transit programs.

The City's Health and Wellness program encourages biking, walking and public transit to get to and from work. and is working toward providing bike racks at all city buildings. An award system is in place for actively taking advantage of alternative ways of getting to work. The City is continually exploring incentives and programs to increase public transportation in ridership among employees.

WASTE

- Set Higher Diversion Rate Goals
- Commercial Recycling Ordinance
- Yard Waste Ordinance

DIVERSION CALCULATOR

FIND OUT YOUR WEEKLY DIVERSION RATE

SET HIGHER DIVERSION RATE GOALS

As a member agency of the South Bay Waste Management Authority (SBWMA), the City collaborates with Recology and Rethink Waste to comply with environmental legislation and meet waste diversion goals established by CalRecycle, including increased participation in AB1826 and AB1341 recycling & organic waste composting programs.

COMMERCIAL RECYCLING ORDINANCE

- Assembly Bill 341: Mandatory Commercial Recycling requires all California businesses that generate four (4) or more cubic yards of garbage per week and multi-family dwellings with five (5) or more units to recycle.
- The purpose of the law is to reduce solid waste sent to landfills, and greenhouse gas emissions.
- The City has an agreement with Recology for all waste/recycling services.

YARD WASTE ORDINANCE

- Assembly Bill 1826 Law requires businesses and multi-family complexes that generate two or more cubic yards of solid waste, recycling, and organic waste combined per week must have organics collection services.
- Gardening or landscaping service offered to impacted businesses are also subject to AB1826 and businesses must ensure that this organic waste is recycled.

Reuse-
Waste Reduction

- In November 2020 the City adopted the SMCO Foodservice Ware Ordinance (Ord. 2020-1154) to eliminate single-use food service ware.

#ChooseToReuse

WATER

- Water Conservation Ordinance
- Water Conservation incentives

WATER CONSERVATION ORDINANCE

State Legislation AB1668 and SB606 for water conservation and drought planning was adopted in 2018. The Dept. of Water Resource and the State Water Control Board developed a handbook outlining timeline, responsibilities, and requirements of State agencies and water suppliers during implementation.

Mid-Pen Water is a BAWSCA member agency, and provides Belmont water service and reports annually to the Water Board.

WATER CONSERVATION INCENTIVES

- MPWD's Water Conservation and Incentive Programs are in conjunction with BAWSCA for rebates & incentives, community outreach, education, and workshops.
- They also participate at the City's Annual Earth Day Event and Public Works Week as another avenue to promote water conservation and provide free giveaways that help reduce water usage.

Next Steps – Climate Action Plan

ENERGY REACH CODES

What is Peninsula Clean Energy?

Peninsula Clean Energy is the official electricity provider for San Mateo County providing cleaner power at lower rates

Energy Reach Codes

Launched in 2016 by San Mateo County and all 20 cities to:

- Provide cleaner energy & lower rates
- Reduce climate pollution
- Foster economic development

Savings of more than **$18 million/year** for accounts across San Mateo County

What are Reach Codes?

- Councils adopt new building codes this year as part of the State's 3-year building code cycle
- Reach codes are local enhancements to state code
- PCE initiative aimed at improved economic and Energy performance for new construction

Addresses:

1. Building electrification – reduced use of natural gas
2. Electric vehicle (EV) charging – increased EV readiness

Summary of Benefits

Over $50M/yr

San Mateo Co "fuel" savings by reaching 45,000 EVs in 2025

1-2 tons CO2

avoided per year for every home

- Major economic value for residents
- Safer and healthier homes
- Advance climate goals
- Enable much greater EV adoption
- Fiscal prudence – more cost effective to address at new construction

Fire & Health

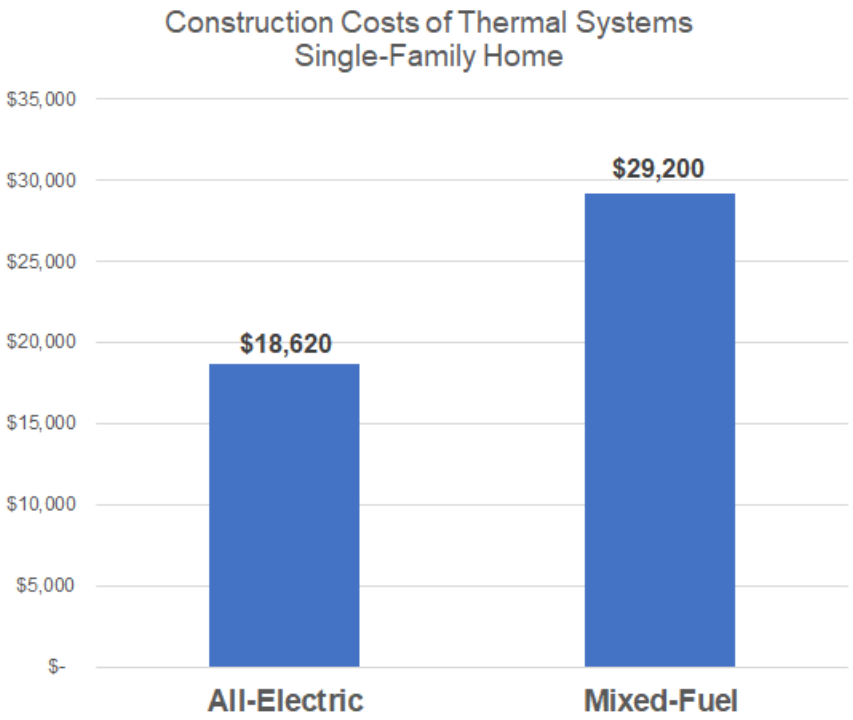
- **Ignition Source**: Natural gas is a significant fire ignition source
  - Pipeline fires: San Bruno, San Francisco
  - Half of earthquake fires
- **Safer Equipment**: Induction ranges automatically turn off, eliminating a leading cause of house fires
- **Faster Recovery**: Electrical distribution recovery is repaired faster than natural gas
- **Health**: Gas stoves in homes increase children's asthma risk by 42%

Stoves: Consumer Reports Prefers Induction

Fuel	Model	Rating	Cost
Induction	Kenmore Elite 95073	89	$1,530
Induction	Kenmore 95103	88	$1,000
Electric Smoothtop	Samsung NE58F9710WS	85	$1,800
Induction	GE Profile PHS930SLSS	83	$2,430
Electric Smoothtop	Samsung NE59J7850WS	82	$1,300
Electric Smoothtop	Samsung NE59J7750WS	82	$1,600
Induction	LG LSE4617ST	82	$3,330
Induction	Frigidaire Gallery FGIF3036TF	82	$990
Gas	LG Signature LUTD4919SN	81	$3,000

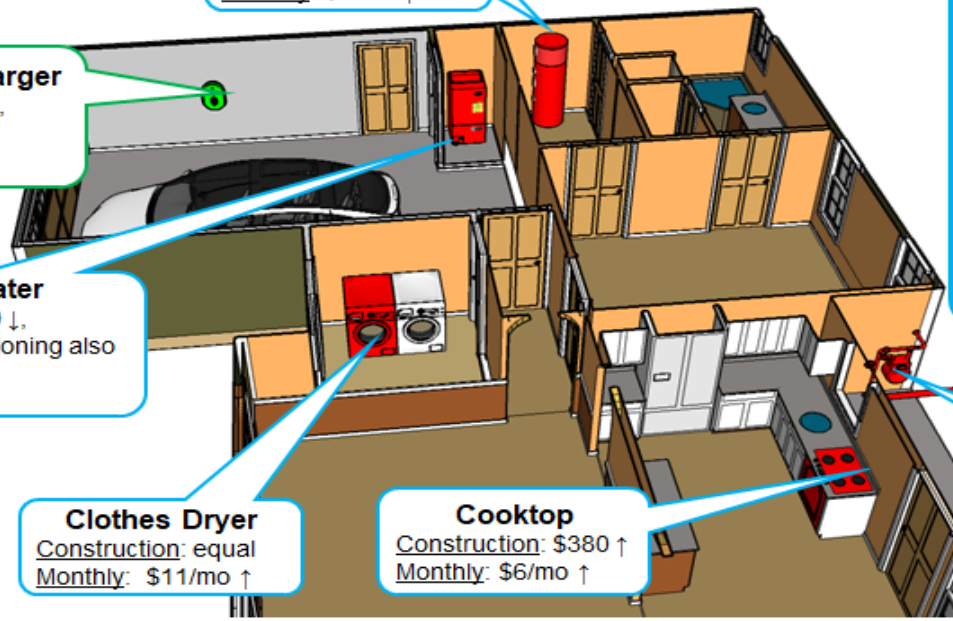
Top 9 Ranges in 2018 were electric-top 2 were Induction

All-Electric New Construction costs Less Than With Gas



- All-electric homes are less expensive to build
- Natural gas plumbing, metering and venting is not required
- Multiple independent analysis including California Energy Commission and University of California
- University of California commits to all-electric construction for all new buildings

Electrifying New Single Family Homes in the Bay Area – The Cost Story



Water Heater
Construction: $510 ↓
Monthly: $7/mo ↑

Electric Vehicle Charger
Construction: Same cost, including incentives
Monthly: $138/mo ↓

Space Heater
Construction: $2000 ↓, assuming air-conditioning also installed
Monthly: $10/mo ↓

Indoor Gas Piping Not Needed
Construction: $2,450 ↓

Clothes Dryer
Construction: equal
Monthly: $11/mo ↑

Cooktop
Construction: $380 ↑
Monthly: $6/mo ↑

Gas Meter & Service Not Needed
Construction: $6,000 ↓
Monthly: $7/mo ↓

Summary

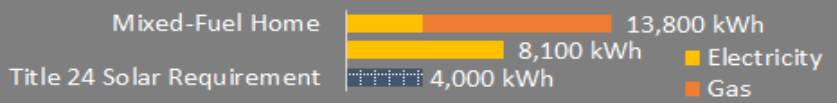
All-Electric Home
Construction: $10,580 ↓
Monthly: $7/mo ↑

All-Electric Home, Increased Solar
Construction: Equal
Monthly: $5/mo ↓

Construction Cost of Thermal Systems

$191 Net Lifecycle Cost Savings per year for an all-electric home versus the mixed-fuel equivalent

Annual Energy Use & Generation



3 MT CO2e Carbon Emissions Savings per home, per year based on 2030 grid mix

Building Code Options

Reach Code Type	How it Works
Natural gas “ban”	No gas hookup allowed
All-Electric Required with limited gas use	Requires most appliances to be electric in the electric code
Choice of All-Electric or High-Efficiency Mixed-Fuel	Creates preference for all-electric

Electric Vehicle Code Options

Speed

Level 1
"Trickle Charging"

Level 2
"Standard Charging"

Level 3
"DC Fast / SuperCharging"

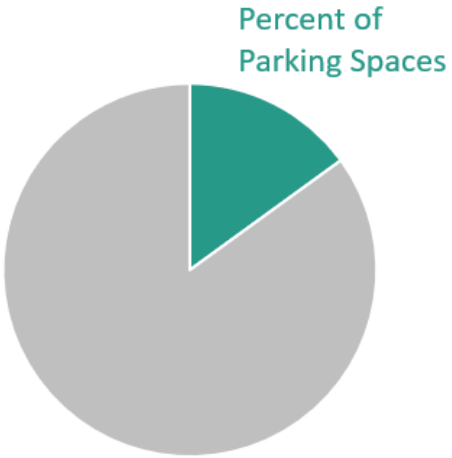
Readiness

EV **Capable**

EV **Ready**

EV **Charging Station**

Number



Summary

Code Element	Approach
Building Electrification	All-Electric for space, water, dryers • May include option for gas stoves • May include options for gas in building classes – ex: kitchens, labs • Optional expanded solar on multi-family and non-residential
Electric Vehicle Readiness	Provides "plug and play" access to vehicle charging • Single family: Level 2 and Level 1 • Multi-unit dwellings: one "EV Ready" space per unit* • Office: 10% Level 2, 10% Level 1, and 30% EV Capable • Other: 6% Level 2 and 5% Level 1 installed (Fast Charge option)

PCE will provide funding support for affordable housing to address EV measures

Summary – Part 2

Code Element	Approach
Building Electrification	Through Energy Code amendments, the City can: • Require all electric for specific energy end uses • Adopt a reach code that encourages all-electric new construction, but still allows for gas for all energy uses. • Not adopt a reach code
Electric Vehicle Readiness	Provides "plug and play" access to vehicle charging • Single family: Level 2 (dryer outlet power) and Level 1 (standard 110v outlet) • Multi-unit dwellings: one "EV Ready" space per unit* • Office: 10% Level 2, 10% Level 1, and 30% EV Capable • Other Commercial: 6% Level 2 installed and 5% Level 1 installed

Major Concerns (1 of 2)

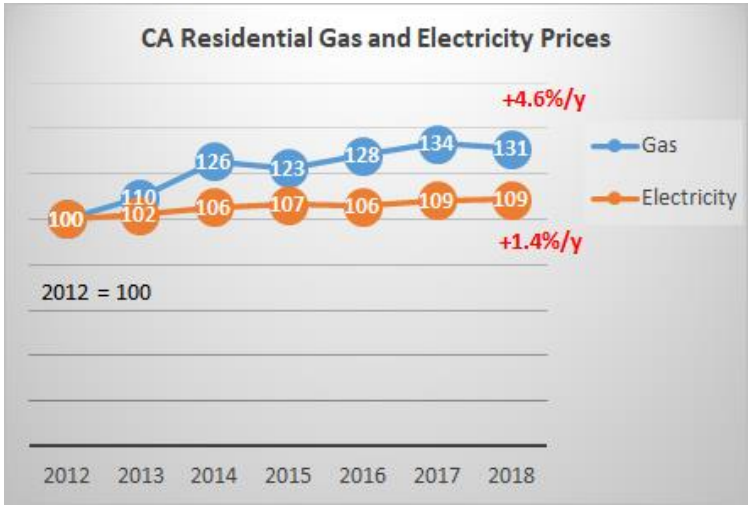
Concern	Response
Distribution grid upgrades are expensive	Sometimes true. But costs are usually more than offset from the savings of all-electric construction.
Resilience, power-shutoffs	Natural gas generally not an option as gas equipment depends on electricity. In emergencies gas is also shut-off. State policy for grid hardening is key.
Uniformity	Fair Concern, but All-Electric is Simpler & Not Adopting Ensures Future Risk. PCE and regional partners are encouraging consistency. All-electric is simple and inaction locks in future cost (retrofits, rates) and risk (fire).

Major Concerns (2 of 2)

Concern	Response
All-Electric heating uses too much energy or can't work in our cool climate	False. All-electric heat pumps are highly efficient and effective in weather far colder than ours. DOE studies show heat pump space heaters as highly efficient at as little as 5 degrees Fahrenheit. California Energy Commissions cost effectiveness studies also show high efficiency.
Energy is not clean	False. PCE base service is 80% GHG free today and targets 100% renewable "round the clock" by 2025
Equipment is not available	Mostly false, Training Needed. Heat pumps and induction stoves have a long-established history and are widely adopted in other states. Numerous California institutions and agencies have committed to all-electric buildings. Training is a need PCE will be addressing.

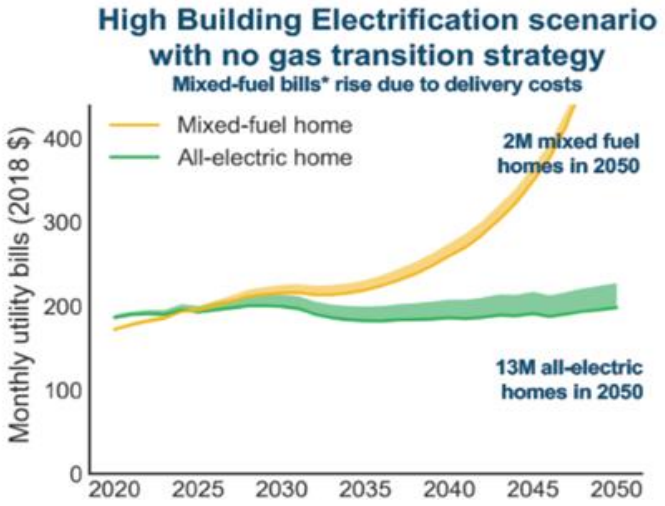
Natural Gas Costs Climbing

CA residential natural gas prices increased 3x faster than electricity prices from 2012 to 2018



CA Source: EIA
https://www.eia.gov/dnav/ng/hist/n3010ca3m.htm
https://www.eia.gov/electricity/data/browser/#/topic/7?agg=2,0,1&geo=g&freq=M

Trend expected to accelerate:



CEC Workshop June 6, 2019: Draft Results from E3 study on the Future of Natural Gas Distribution in California

Gas Has Limited Use without Electric

Space Heating	Water Heating	Clothes Drying	Cooking
			
Electric fans required for gas furnaces	Electronic ignition required for gas water heaters in California	Electric motor runs tumbler in gas dryers	Will work without electricity, must light with match or lighter

The solution for resilient thermal systems is not to use gas, because the systems do not work without electricity. Add resilience by going all-electric with on-site backup generator or energy storage.

Resources for Cities

1. $10,000 grant – City is leveraging this funding
2. Optional model codes
3. Consultant time for questions, customization
4. Adoption and implementation tools

Resources for Implementation


Compliance with Building Electrification Reach Code – Single Family

Instructions: Fill out form and attach form directly on drawing set for permit review. This form is only required for New Construction projects.

Is the building applying for a permit all-electric, or is it mixed-fuel (using gas or propane for some end uses)?

(•) All-Electric ( ) Mixed-Fuel

If All-Electric:

- Does the building's energy model meet California Energy Code (CEC) Compliance? ____

If Mixed-Fuel

- Does the building meet each of the following requirements? *Call-out specifically on electrical and mechanical plans*
  - Is a dedicated 240V, 30A electrical receptacle located within 3 feet of each water heater? ____
  - Is a dedicated 240V, 30A electrical receptacle located within 3 feet of each clothes dryer? ____
  - Is a dedicated 240V, 50A electrical receptacle located within 3 feet of each cooktop? ____
  - Is the air conditioning system capable of operating in heat pump mode? ____
- Does the building's energy model perform 15% better than CEC requires? ____
- If prescriptive performance path is selected, does the building meet each of the following requirements in addition to requirements? *Call-out specifically on plans*
  - Verified low leakage ducts in conditioned space ____
  - R-10 perimeter slab insulation ____
  - Meets requirements for "basic compact hot water distribution ____
  - Fan efficacy of 0.35 Watts/CFM verified by HERS rater ____
  - If building uses gas or propane for space heating or water heating:
    - Includes 5 kWh battery storage system ____
    - Includes solar water heating with 0.20 solar fraction or greater ____

<u>Adoption Resources</u>

- Ordinance Language
- Staff Report & Slides
- Homeowner Flyer
- FAQs
- Cost Effectiveness Infographic

<u>Permitting, enforcement, and inspection resources</u>

- Permit Checklist
- Inspection Checklist
- Training for Building Department Staff
- FAQs

Request

Staff is seeking City Council input and direction on the most recent model Energy Reach & EV Infrastructure Code Amendments that Staff should develop and return to Council for future consideration and adoption.

Multi-Jurisdictional Reach Code Summary (San Mateo County)

	City	Status	Reach Code Type				
			No Reach	Electric Preferred	All-Electric*	Natural Gas Bans*	EV Infrastructure
San Mateo County	Atherton	Adopted	X				
	Brisbane	Adopted			X		
	Burlingame	Adopted			X		X
	Colma	Adopted		X			X
	Daly City	Evaluating			Evaluating		
	East Palo Alto	Adopted			X		X
	Menlo Park	Adopted			X		X
	Millbrae	Adopted			X		X
	Pacifica	Adopted			X		
	Redwood City	Adopted			X		X
	San Bruno	Evaluating					
	San Carlos	Adopted			X		X
	San Mateo	Adopted			X		X
	San Mateo County	Adopted			X		X
	South San Francisco	Evaluating			Evaluating (Res)		X
	Woodside	Adopted	X				

Multi-Jurisdictional Reach Code Summary (Santa Clara County)

	City	Status	Reach Code Type				
			No Reach	Electric Preferred	All-Electric*	Natural Gas Bans*	EV Infrastructure
Santa Clara County	Campbell	Adopted			X (Res)		X
	Cupertino	Adopted			X		X
	Gilroy	Adopted	X				
	Los Altos	Adopted			X		
	Los Altos Hills	Adopted			X (Res)		
	Los Gatos	Adopted			X (Res)		X
	Milpitas	Adopted		X			X
	Morgan Hill	Adopted				X	
	Mountain View	Adopted			X		X
	Palo Alto	Adopted		X (NonRes)	X (Res)		X
	San Jose	Adopted				X	X
	Saratoga	Adopted			X		
	Sunnyvale	Adopted			X		

Multi-Jurisdictional Reach Code Summary (Other Regional Cities)

	City	Status	Reach Code Type				
			No Reach	Electric Preferred	All-Electric*	Natural Gas Bans*	EV Infrastructure
Neighbors	Alameda	Adopted				X (Municipal)	
	Albany	Adopted		X			
	Berkeley	Adopted		X		X	X
	Hayward	Adopted		X (NonRes)	X (Res)		
	Marin County	Adopted		X			
	Mill Valley	Adopted		X (Res)			X
	Oakland	Adopted				X	
	Piedmont	Adopted			X (Res)		
	Richmond	Adopted			X		
	San Anselmo	Adopted		X			
	San Francisco	Adopted				X	X
	Santa Cruz	Adopted				X	
	Santa Rosa	Adopted			X (Res)		

Contact

PENINSULA CLEAN ENERGY

•Website:
www.PeninsulaReachCodes.org

•Contact:

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Denise Lin
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Energy Reach/EV Model Codes

- Questions?
- Thank you!

PENINSULA CLEAN ENERGY